Best Practices in Workplace Surveillance

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Laboratory Reporting for Identifying Workplace Pesticide Illness

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NORA priority area: Research tools and approaches
Surveillance research methods
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* In-kind contribution

California Laboratory Reporting

Background: Pesticide Illness in California*

- 0.75 million farmworkers (HRSA)
- 202 million pounds pesticides applied (CDPR)
- 565 occupational pesticide illnesses‡ (SENSOR)
  - 36% cholinesterase-inhibiting pesticides

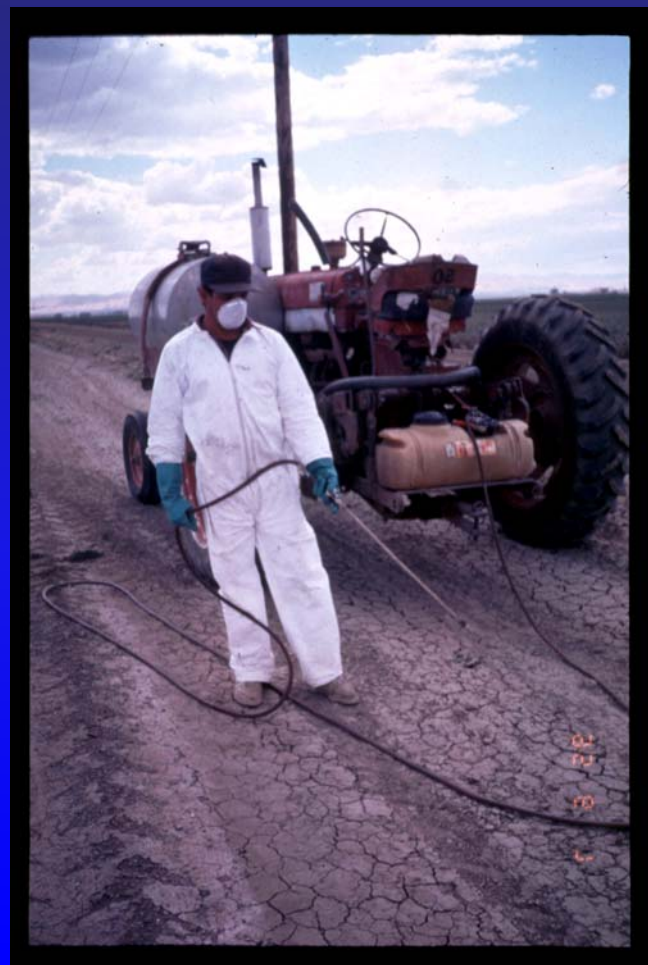
* 1999 data

‡ excludes disinfectants & unknown pesticide cases

California Department of Health Services

Background: Existing Pesticide Illness Surveillance System

- California physicians must report suspected
  - Occupational illness or injury
  - Pesticide illness
    - (Poison control centers may also report)
- Limitations
  - Underreporting
  - Time lag



Background: Cholinesterase Testing in California

- Standardized reporting of cholinesterase results
- Biological monitoring program (Medical Supervision)
  - Requires baseline & periodic cholinesterase levels for agricultural workers who handle pesticides
  - Sets standards for medical removal based on cholinesterase test results
  - No physician training or certification required

Background: Cholinesterase-Inhibiting Pesticides

- 2 categories:
  - Organophosphates (e.g., chlorpyrifos)
  - N-methyl carbamates (e.g., carbaryl)
- Detection of poisoning
  - Low levels of cholinesterase (RBC or plasma)
    - Compared to individual baseline (preferable)
    - Compared to laboratory lower limit of normal
  - Characteristic symptoms & signs appear later

California Laboratory Reporting

Goals

- Pilot test direct lab reporting as a surveillance method for pesticide illness due to cholinesterase-inhibiting pesticides
- Evaluate type & severity of cases
- Assess whether direct reporting enhances current system of pesticide illness surveillance

Methods

- Recruit clinical labs to voluntarily report cholinesterase results directly to DHS
- Request medical records
- Case: employee with cholinesterase depression compared to baseline or lab normal
- Conduct telephone interviews with cases
  - Advance notice of interview (postcard)
  - Monetary incentive (postal money order)
  - English/Spanish questionnaire

California Laboratory Reporting

Preliminary Results

Reporting Laboratories

Lab	Client Base	ChE Tests per Year in Calif.*
1	Statewide	2,000
2	Nationwide	200
3	Countywide	300

*Estimates based on results to date

California Laboratory Reporting

Preliminary Results

Average # Reports per Month*

Lab	Total	Low ChE	Comparison
1	203	20 (10%)	Lab normal
2	18	1 (6%)	Lab normal
3	22	8 (36%)	Baseline

* Reporting periods vary by laboratory

Abnormal Cholinesterase Results

- 449 lab reports w/abnormal (low) ChE
- 236 individuals
- 291 incidents
  - Occupational?
    - Yes 82 (28%)
    - No 1 (1%)
    - Unknown 208 (71%)
- Most tests done for routine monitoring
  - Most individuals asymptomatic

Employee Interviews

- Status
  - 21 attempted
  - 9 completed
  - 9 unreachable
  - 3 refusals
- Industry
  - 5 hazardous waste management
  - 3 agriculture
  - 1 structural pest control

Evaluation

- Capturing unique incidents
  - 291 NORA incidents (2000-2001, approx. 1 year)
  - 565 SENSOR occupational illnesses (1999)
- Receiving significant proportion of California cholinesterase test results
  - Largest lab in the state reporting
- Workforce hard to reach

Successful Approaches I

- Recruiting largest private lab in California
- Fostering personal relationships with labs
- DHS has legal mandate to collect medical information
- Obtaining cooperation of physicians

Successful Approaches II

- Improving interview response rate
  - Advance notice of interview (postcard)
  - Monetary incentive (postal money order)
  - English/Spanish questionnaire
- Collaborating with other agencies
- Building on existing surveillance database

Successful Approaches III

- Training health care providers in the community, academia, health departments
- Distributing educational materials to employees during follow-up
  - Culturally appropriate
  - Targeted by occupation
- Distributing educational materials at conferences
- Dissemination plan will be developed

Challenges

- Clinical laboratories
  - Competing priorities
    - Low profit margin, client confidentiality & loyalty
- Employers
  - Avoid biological monitoring program
  - Maintain control of test results
- All
  - Poor knowledge of tests & biological monitoring
- Cholinesterase test
  - Methodology & interpretation not standardized

Public Health Significance

- Direct reporting of laboratory results enhances surveillance of occupational pesticide illness
  - Potential to reduce workplace illness, healthcare costs, loss of productivity
  - Little additional burden on physician
- Results may have clinical relevance
  - Correlation of test results & clinical findings
- Chemical terrorism surveillance capability

California Laboratory Reporting

Recommendations

- Evaluate mandatory laboratory reporting
  - Legislation requiring reporting of pesticide tests
- Improve training for employers & physicians
  - Certification for medical supervisors
  - Decreased insurance costs for employers
- Recruit more clinical labs into current study
- Conduct employer survey
  - Current practices & barriers to compliance